CONDITION

Actinomycosis

Learn how actinomycosis causes slow-growing infections in the jaw, chest, abdomen, or pelvis, and how it is diagnosed, treated, and monitored.

WHAT IT IS
Uncommon slow-growing bacterial infection

BODY SYSTEM
Mouth, jaw, lungs, digestive and reproductive systems

MAIN SYMPTOMS
Slow-growing lump, swelling, pain, draining pus

WHAT CAUSES IT
Actinomyces bacteria entering damaged tissue

HOW IT IS DIAGNOSED
Tissue biopsy or deep pus culture

MAIN TREATMENT
Antibiotics, drainage or surgery

CAN IT BE CURED?
Yes, usually with appropriate antibiotics

IS IT AN EMERGENCY?
Sometimes, with severe difficulty breathing

LONG-TERM OUTLOOK
Usually treatable, but untreated infection can spread

Overview

Actinomycosis is an uncommon, slowly developing bacterial infection. It is caused mainly by Actinomyces bacteria, which normally live in the mouth, digestive tract, and female genital tract without causing harm.

Despite the name, actinomycosis is not a fungal infection. Actinomyces are bacteria that grow best where there is little or no oxygen. Infection usually begins when an injury, dental problem, surgery, inflammation, or another event damages the body's natural barriers. The bacteria can then enter deeper tissue.

Actinomycosis often causes an area of long-lasting inflammation, an abscess, or a firm mass. An abscess is a pocket of infected material. The infection may slowly spread across normal tissue boundaries and form sinus tracts, which are small channels that drain through the skin or

into nearby organs.

The infection most often affects the face, jaw, or neck. It can also develop in the chest, abdomen, or pelvis. Less commonly, it affects bones, the brain, or other areas.

Actinomycosis matters because it can resemble cancer, tuberculosis, inflammatory bowel disease, or another chronic condition. Diagnosis may take time because routine swabs and cultures can miss the bacteria. With appropriate antibiotics like amoxicillin or doxycycline and, when needed, drainage or surgery, actinomycosis is usually treatable.

Symptoms

Symptoms depend on where the infection develops. They often appear gradually over weeks or months. Fever may be mild or absent, especially early in the illness.

Actinomycosis of the face, jaw, or neck is called cervicofacial actinomycosis. Possible symptoms include:

The drainage may contain tiny yellow or white particles called sulfur granules. These particles are clusters of bacteria and inflammatory material. They do not contain sulfur, and their absence does not rule out the infection.

Chest infection, also called thoracic actinomycosis, may cause a persistent cough, chest discomfort, shortness of breath, fever, fatigue, or weight loss. Some people cough up mucus or blood. The infection may involve the lungs, chest wall, or the space around the lungs.

Abdominal actinomycosis may cause ongoing abdominal pain, a mass, fever, changes in bowel habits, or unexplained weight loss. Symptoms can appear after abdominal surgery, a bowel injury, or inflammation such as appendicitis.

Pelvic actinomycosis may cause lower abdominal or pelvic pain, unusual vaginal discharge, irregular bleeding, fever, or a pelvic mass. It is sometimes associated with long-term use of an intrauterine device, or IUD. However, finding Actinomyces -like organisms on a cervical screening test in someone without symptoms does not by itself mean that invasive actinomycosis is present.

Brain or spinal involvement is rare but may cause severe headache, weakness, numbness, confusion, seizures, or problems with balance.

Arrange routine medical evaluation for a slowly growing lump, persistent drainage, ongoing jaw or dental symptoms, unexplained pelvic or abdominal pain, or a cough that does not improve.

Seek urgent or emergency care for:

- A firm or tender lump near the jaw, cheek, or neck
- Swelling that slowly becomes larger
- Jaw pain or difficulty opening the mouth
- Tooth pain or recent dental problems
- Skin openings that drain pus
- Thickened or discolored skin over the affected area
- Severe difficulty breathing or coughing up more than a small amount of blood
- New weakness, facial drooping, confusion, fainting, or a seizure
- Sudden or severe abdominal pain, especially with a rigid or swollen abdomen
- Rapidly worsening swelling that affects breathing or swallowing
- Signs of severe infection, such as marked confusion, very fast breathing, or inability to stay awake

Causes and risk factors

Actinomycosis usually develops from bacteria already living in the person's body. It is not generally considered contagious and is not typically spread through casual contact.

Healthy skin and moist body linings normally keep the bacteria on the surface. Infection can begin when those barriers are disrupted. Several species may be involved, and other mouth or intestinal bacteria often grow alongside Actinomyces .

Factors that may increase the chance of infection include:

Having one of these factors does not mean a person has or will develop actinomycosis. For example, IUDs are widely used, and pelvic actinomycosis remains uncommon. An incidental laboratory finding in a person without symptoms is different from an invasive infection.

- Poor dental health, tooth decay, or gum disease
- Dental extraction, jaw injury, or other procedures involving the mouth
- Aspiration, in which saliva or stomach contents enter the lungs
- Recent abdominal surgery, bowel perforation, or appendicitis
- Long-term IUD use, particularly when pelvic symptoms are present
- Tissue damage caused by inflammation, injury, or radiation treatment

- A weakened immune system, although actinomycosis can also affect people with normal immunity

Diagnosis

Diagnosis begins with a detailed history and physical examination. A clinician may ask about dental health, recent procedures, abdominal surgery, swallowing problems, IUD use, symptom duration, and any drainage from the affected area.

Imaging can show the location and extent of disease but usually cannot confirm the cause. Depending on the symptoms, imaging may include dental X-rays, ultrasound, CT, or MRI. A chest infection may initially appear similar to pneumonia, a lung abscess, or a tumor.

A tissue biopsy or a sample of pus from deep within the affected area is often important. A biopsy removes a small piece of tissue for examination. Samples taken from a draining surface or with a simple swab may be contaminated by normal bacteria and may not provide a clear answer.

The laboratory may examine tissue for branching bacteria and sulfur granules. It may also place the sample in an oxygen-free culture environment to try to grow Actinomyces . These bacteria grow slowly and can be difficult to recover, particularly if antibiotics were started before the sample was collected. The laboratory may need to keep cultures for longer than it would for many common bacteria.

Modern laboratory methods, including specialized identification techniques or molecular testing, may help identify the species when standard culture is unsuccessful. A negative culture does not always exclude actinomycosis.

Blood tests may show inflammation or anemia, but these findings are not specific. Because the condition can resemble cancer or other infections, clinicians may also test for tuberculosis, fungal disease, or another diagnosis based on the person's history and imaging.

Treatment and management

Antibiotics are the main treatment. Penicillin-based medicines, such as penicillin or amoxicillin, are commonly used because many Actinomyces species are susceptible to them. Severe or extensive infections may be treated first with an intravenous antibiotic, meaning medicine given into a vein, followed by an oral antibiotic as the condition improves.

Treatment is often longer than treatment for routine skin or respiratory infections. The exact duration depends on the infection's location, how far it has spread, whether infected tissue

was removed, and how quickly symptoms and imaging improve. Some people need treatment for several months. Shorter courses may be possible after effective drainage or complete removal of a small, localized infection, but this decision requires specialist guidance.

People with a penicillin allergy may have other options. The choice depends on the type of allergy, laboratory results, infection site, and other health conditions. Not every antibiotic used for dental, abdominal, or vaginal infections works reliably against Actinomyces . Treatment should therefore be selected by a clinician rather than based only on the general location of symptoms.

Surgery or another procedure may be needed to:

Surgery does not always replace antibiotics because bacteria may remain in surrounding tissue.

Dental care is important when infection begins in the mouth or jaw. Treatment may include addressing tooth decay, gum disease, or an infected tooth. Good oral hygiene can support healing and reduce further tissue injury.

For confirmed pelvic actinomycosis associated with an IUD, the care team may recommend removing the device as part of treatment. This is different from finding Actinomyces -like organisms during routine cervical screening in a person who has no symptoms. Incidental findings do not automatically require antibiotics or IUD removal.

People should take antibiotics for the full period recommended by their treating clinician. Stopping early may allow a slow-growing infection to return. New rash, severe diarrhea, breathing difficulty, or other possible medicine reactions should be reported promptly.

- Drain a large abscess
- Remove severely damaged or dead tissue
- Relieve pressure or an obstruction
- Treat an abnormal connection between organs
- Obtain tissue when cancer or another disease cannot be excluded

Complications

Without effective treatment, actinomycosis can spread through nearby muscles, skin, bones, and organs. Scar-like tissue may develop around the infection, making it harder for antibiotics to reach the affected area.

Possible complications include recurring abscesses, persistent draining tracts, bone infection,

tissue destruction, or narrowing of an airway or part of the digestive tract. Chest disease can spread to the chest wall, ribs, or lining around the lungs. Abdominal or pelvic infection can affect the bowel, bladder, urinary tubes, or reproductive organs.

Rarely, the infection spreads through the bloodstream to distant sites, including the brain. Brain involvement can cause an abscess or other serious neurologic problems.

Complications are not inevitable. Early identification, adequate sampling, appropriate antibiotics, and drainage when needed can improve the chance of complete recovery.

Follow up

Follow-up is important because symptoms may improve before the infection has fully cleared. Appointments allow the care team to check swelling, pain, drainage, fever, breathing, eating, and overall energy.

Blood tests may be repeated if they were abnormal at diagnosis. Follow-up imaging may be used for deep chest, abdominal, pelvic, bone, or brain infections. Imaging changes can take time to resolve, so clinicians consider both the scan and the person's symptoms.

Contact the treating clinician between scheduled visits if a lump enlarges, drainage returns, fever develops, pain worsens, or antibiotic side effects make it hard to continue treatment. A return of symptoms after treatment may require new imaging or another tissue sample rather than simply restarting the same medicine.

Long-term follow-up may be needed for extensive disease or an infection involving bone, the chest, or the nervous system. Routine dental care and management of the condition that allowed bacteria to enter deeper tissue may help reduce recurrence.

Sources

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